

### REMARKS

The application has been reviewed in light of the Office Action mailed July 30, 2003. At the time of the Office Action, Claims 1-19 and 26-28 were pending in this application. Claims 1-19 were rejected. Applicants appreciate the Examiner's attention to the application and provide the following remarks, which will hopefully clarify the scope of the disclosure in the cited reference.

#### **Withdrawal of Election/Restriction Requirement**

Applicant acknowledges that the election of species requirement set forth in the election/restriction requirement mailed March 26, 2003 was withdrawn in view of Applicant's amendments to the Claims filed April 28, 2003, limiting the charged material to xanthine.

#### **Rejections under 35 U.S.C. § 102**

Claims 1-18 were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by US. Patent 5,808,041 issued to Vikas V. Padhye et al. ("Padhye et al."). Applicant respectfully traverses and submits that Padhye fails to anticipate at least one element of each independent claim of the present application, Claims 1, 10 and 19, and thus also fails to anticipate all of the remaining dependent claims.

More specifically, each of the independent claims requires nucleic acids covalently bonded to silica (Claim 1 and 10) or a surface (Claim 19). Padhye fails to disclose covalent bonding of nucleic acids and thus fails to contain this element of each claim.

Padhye discusses a method of purifying nucleic acids by non-covalent bonding. Specifically, Padhye discloses "mixtures of silica mixtures, silica gel and glass particles, particularly glass microfibers; such mixtures combined with chaotropic salts, such as guanidinium chloride or guanidinium thiocyanate; and suspensions of such mixtures in aqueous solutions of chaotropic salts." (See Abstract.) Padhye does not disclose silica or surfaces covalently bonded to nucleic acids in the Abstract or elsewhere in the application, nor does such covalent bonding occur using the methods of Padhye.

Padhye discloses a method of isolating nucleic acids using the following basic technique: "[A]n aqueous solution comprising nucleic acid is mixed with an aqueous solution of chaotropic salts and the resulting solution is contacted with a mixture of silica

materials, whereupon the nucleic acid in the solution binds to the silica materials. The chaotropic salts and components, other than the nucleic acid adsorbed to the silica materials, from the aqueous solution treated by the method of the invention are washed from the silica materials. Finally, the nucleic acid can be obtained by elution from the silica materials.” (See Abstract.)

While the above passages and other sections of Padhye make clear that the nucleic acids are bound to the silica, Applicant submits that it is equally clear that the nucleic acids are bound by non-covalent bonds. First, there is no reason to expect a chaotropic salt solution to induce covalent bonding between nucleic acids and silica. The chaotropic salt solution causes the nucleic acid to lose its secondary structure. (See Col. 5, Lines 45-55.) It is likely this disruption of secondary structures that allows the improved binding of nucleic acids to silica that is seen in Padhye. However, disruption of the secondary structure in no way implies that the nucleic acids are bound to silica in any way other than through electrostatic interactions, such as those involving the phosphate groups along the nucleic acid backbone.

Second, the lack of covalent bonding in Padhye is further supported by the fact that the nucleic acid may simply be eluted from the silica. Elution generally involves the breaking of non-covalent bonds through change in pH or other ion concentration. Padhye describes elution of the nucleic acid using water or a low-salt solution. (See Col. 9, Lines 9-27.) It is extremely unlikely that a covalent bond between silica and a nucleic acid would be broken merely by the addition of water or a low salt solution. However, electrostatic bonds are readily broken by such solutions.

In summary, Applicant submits that Padhye teaches the disruption of secondary structure in nucleic acids, which then allows increased non-covalent bonding of the nucleic acids to the silica. Nothing in Padhye explicitly or implicitly discloses covalent bonding of nucleic acids to silica or any other surface. Furthermore, because Padhye teaches elution of nucleic acids from the silica with water or a low-salt solution rather than a solution able to facilitate breaking of a covalent bond, Padhye actually teaches against covalently bonding a nucleic acid to silica or another surface. In light of the failure of Padhye to disclose covalent bonding of nucleic acids, Applicant submits that the present claims are free of prior art and requests withdrawal of the rejection under §102(b).

**Information Disclosure Statement**

Applicant submits an Information Disclosure Statement, PTO Form 1449 and copy of the reference, herewith for the Examiner's consideration. Applicant also submits a check in the amount of \$180.00 for the filing fee.

**CONCLUSION**

Applicant appreciates the Examiner's attention to the application. For the foregoing reasons and for other reasons readily apparent, Applicant respectfully requests reconsideration and full allowance of Claims 1-19 and 26-28, as amended.

Applicant believes a fee of \$55 for a one-month extension of time under 37 C.F.R. §1.17(a)(1) and includes a check in this amount. Applicant believes no additional fees are due at this time, however, if any fees are due, the Commissioner is hereby authorized to charge any fees to Deposit Account No. 02-0383 of Baker Botts L.L.P.

Respectfully submitted,

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